

WHAT IS CLAIMED IS:

- Sub A1
- 5 1. A vaccine capable of inducing an immune response in a mammal to a specific antigen wherein the vaccine comprises a unit dose of an anthrax protective antigen and said specific antigen bound to an anthrax protective antigen binding protein.
2. The vaccine of claim 1 wherein the protective antigen is a processed protective antigen.
- 10 3. The vaccine of claim 1 wherein the vaccine is sterile.
4. The vaccine of claim 1 wherein the vaccine further comprises physiologically compatible salts.
- 15 5. The vaccine of claim 4 wherein the vaccine is in an aqueous solution of physiologically compatible salts.
- 20 6. The vaccine of claim 1 wherein the anthrax protective antigen binding protein is the lethal factor of *Bacillus anthracis*.
7. The vaccine of claim 1 wherein the anthrax protective antigen binding protein comprises at least about the first 250 amino acid residues of the lethal factor of *Bacillus anthracis* and less than all of the amino acid residues of the lethal factor.
- 25 8. The vaccine of claim 1 wherein the molar ratio of protective antigen to the antigen bound to an anthrax protective antigen binding protein is greater than one.
- 30 9. A method of immunizing a mammal against an antigen which comprises administering a safe and effective amount of a vaccine comprising an anthrax protective antigen and said antigen bound to an anthrax protective antigen binding protein.

10. The method of claim 9 wherein the protective antigen is a processed protective antigen.

11. The method of claim 9 wherein the vaccine is sterile.

12. The method of claim 9 wherein the vaccine further comprises physiologically compatible salts.

13. The method of claim 12 wherein the vaccine is in an aqueous solution of physiologically compatible salts.

14. The method of claim 9 wherein the anthrax protective antigen binding protein is the lethal factor of *Bacillus anthracis*.

15. The method of claim 9 wherein the anthrax protective antigen binding protein comprises at least about the first 250 amino acid residues of the lethal factor of *Bacillus anthracis* and less than all of the amino acid residues of the lethal factor.

16. The method of claim 9 wherein the molar ratio of protective antigen to the antigen bound to an anthrax protective antigen binding protein is greater than one.

17. The method of claim 9 wherein the vaccine is administered via parenteral injection.

18. The method of claim 9 wherein the vaccine is administered via subcutaneous injection.

19. The method of claim 9 wherein the vaccine is administered in a unit dose that is between 10 to 500 nanograms of antigen bound to an anthrax protective antigen binding protein per kilogram of said mammal.

20. A method of inducing antigen presenting mammalian cells to present specific antigens on their cell membranes via the MHC class I processing pathway, comprising:

i) selecting cells that can process and present specific antigens on their cell membranes via the MHC class I processing pathway;

ii) contacting the cells with an anthrax protective antigen and said specific antigen bound to an anthrax protective antigen binding protein; and,

iii) permitting the cells to internalize, process and present said specific antigen bound to an anthrax protective antigen binding protein on its cell membrane, forming a specific antigen presenting cell.

21. A method of claim 20 wherein the antigen presenting mammalian cells are further contacted with an effector lymphocyte cell that recognizes the antigen presented on the cell membranes of the antigen presenting cells.

22. The method of claim 20 wherein the protective antigen is a processed protective antigen.

23. The method of claim 20 wherein the anthrax protective antigen binding protein is the lethal factor of *Bacillus anthracis*.

24. The method of claim 20 wherein the anthrax protective antigen binding protein comprises at least about the first 250 amino acid residues of the lethal factor of *Bacillus anthracis* and less than all of the amino acid residues of the lethal factor.

25. The method of claim 20 wherein the molar ratio of protective antigen to the antigen bound to an anthrax protective antigen binding protein is greater than one.

26. The method of claim 20 where said antigen presenting cell is a dendritic cell.

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